



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,948	09/29/2003	Koji Hasegawa	0171-1023P	8310

2292 7590 02/22/2006

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

LEE, SIN J

ART UNIT	PAPER NUMBER
----------	--------------

1752

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/671,948

Applicant(s)

HASEGAWA ET AL.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-26 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

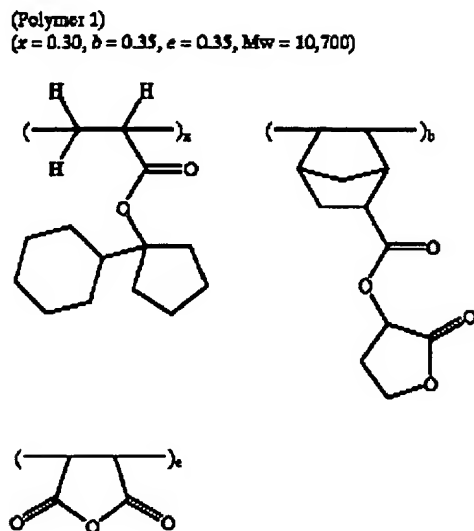
DETAILED ACTION

1. In view of the amendment of December 1, 2005, previous 102(b) rejection on claim 1 over Jung et al (Chem. Abstract 1991:61346), previous 103(a) rejection on claims 1, 4 and 13-17 over Nio et al (JP'760) and previous 103(a) rejection on claims 1 and 3-8 over Nishi et al'182 in view of Hasegawa et al'258 are hereby withdrawn.
2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

3. Claims 1, 4, and 13-26 are rejected under 35 U.S.C. 103(a) as being obvious over Hasegawa et al (US 2001/0044071) in view of Chiba et al (US 6,280,900 B1).

Hasegawa teaches the following polymer (Polymer 1) in [0172]:



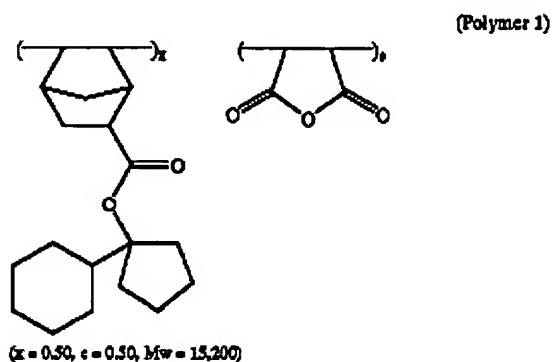
Hasegawa teaches a resist composition containing Polymer 1 and a photoacid generator in Example 1 (see Table 1). Hasegawa spin-coats his resist composition solution onto a silicon wafer and then bakes the coated resist composition solution to give a resist film. The resist film is exposed using ArF laser and then baked and puddle developed to give a resist pattern (see [0180]).

The first repeat unit of the polymer shown above does not include present furandiyl, tetrahydrofurandiyl or oxanorbornanediyl group. However, it is well known in the art that the *cyclohexyl* group shown in the first repeat unit of the above polymer and a tetrahydrofuranyl group are equivalent cyclic acid-decomposable groups as evidenced by Chiba et al, col.15, lines 26-31. Because the *cyclohexyl* group and a tetrahydrofuranyl group were art-recognized equivalents at the time the invention was made, it would have been obvious to one of ordinary skill in the art to substitute the tetrahydrofuranyl group for the *cyclohexyl* group in the first repeat unit of Hasegawa's polymer shown above. Such polymer teaches present polymer which is made from the

present ester compound of formula (1) (specifically, *the 7th ester compound* shown in present claim 18). Therefore, Hasegawa in view of Chiba would render obvious present inventions of claims 1, 4, and 13-26.

4. Claims 1, 4-8, and 18-23 are rejected under 35 U.S.C. 103(a) as being obvious over Hasegawa et al (US 2002/0004178 A1) in view of Chiba et al (US 6,280,900 B1).

Hasegawa teaches the following polymer (Polymer 1) in [0174]:



Hasegawa teaches a resist composition containing Polymer 1 and a photoacid generator in Example I-1 (see Table 1). Hasegawa spin-coats his resist composition solution onto a silicon wafer and then bakes the coated resist composition solution to give a resist film. The resist film is exposed using KrF laser and then baked and developed to give a positive resist pattern (see [0179]).

The first repeat unit of the polymer shown above does not include present furandiyl, tetrahydrofurandiyl or oxanorbornanediyl group. However, it is well known in the art that the *cyclohexyl* group shown in the first repeat unit of the above polymer and a tetrahydrofuranyl group are equivalent cyclic acid-decomposable groups as evidenced by Chiba et al, col.15, lines 26-31. Because the *cyclohexyl* group and a tetrahydrofuranyl group were art-recognized equivalents at the time the invention was

made, it would have been obvious to one of ordinary skill in the art to substitute the tetrahydrofuranyl group for the *cyclohexyl* group in the first repeat unit of Hasegawa's polymer shown above. Such polymer teaches present polymer which is made from the present ester compound of formula (1) (specifically, the 15th ester compound shown *from the end of present claim 18*). Therefore, Hasegawa in view of Chiba would render obvious present inventions of claims 1, 4-8, and 18-23.

Double Patenting

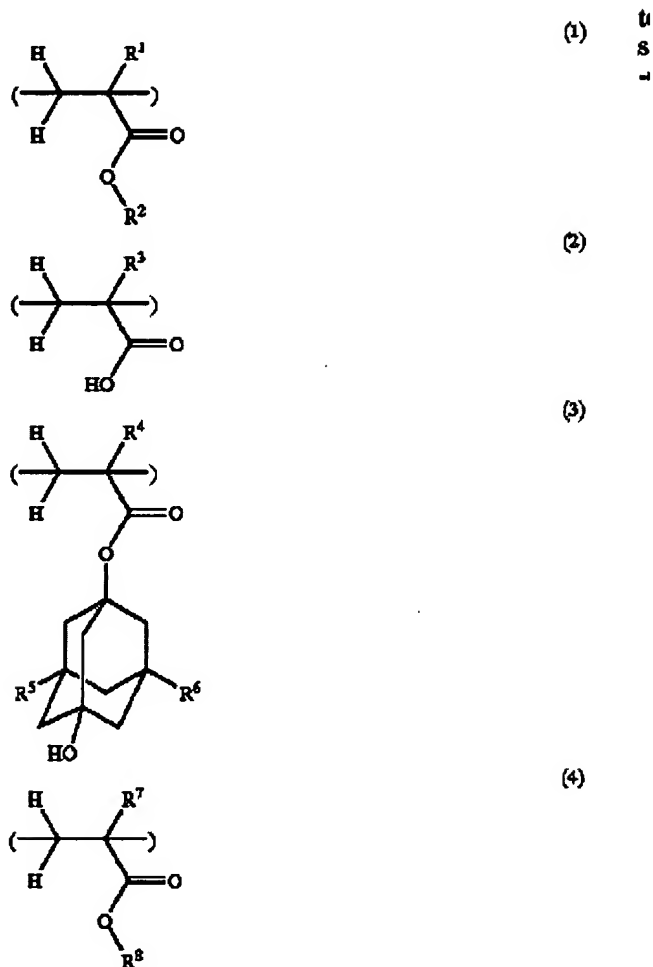
5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

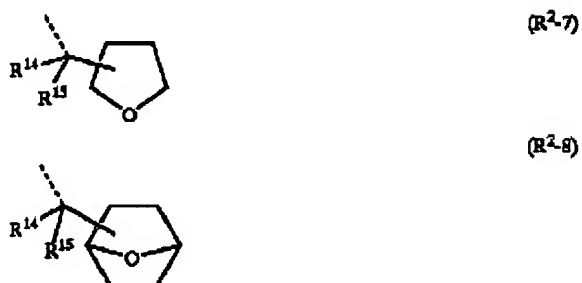
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, 2, 4, and 9-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 9 and 10 of copending Application No. 10/936,753. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

Claim 1 of App.'753 teaches a polymer comprising the following recurring units;



In claim 4, App.'753 teaches that R^2 in the formula (1) shown above can be represented by at least one of the following formulas;



in which R^{14} and R^{15} are independently a straight, branched or cyclic C_1 - C_{10} alkyl group. Based on this teaching, it would have been obvious to one skilled in the art to have R^{14}

and R¹⁵ to be a straight C₁₀ alkyl group because C₁₀ is clearly shown as the higher end of the taught range. Therefore, App.'753 renders obvious present inventions of claims 1, 2, 4, 9, 10, 13-15, 24 and 25. Also, claims 9 and 10 of App.'753 renders obvious present inventions of claims 11, 12, 16, 17 and 26. Also, claim 4 of App.'753 teaches that R¹⁴ and R¹⁵, taken together, may form a ring with the carbon atom to which they are bonded. Therefore, App.'753 renders obvious present invention of claim 23 as well.

With respect to present claim 18, as discussed above, claim 4 of App.'753 teaches that R¹⁴ and R¹⁵ of (R2-7) and (R2-8) are independently a straight, branched or cyclic C₁-C₁₀ alkyl group. Based on this teaching, it would have been obvious to one skilled in the art to have R¹⁴ and R¹⁵ to be a straight C₁ alkyl group because C₁ is clearly shown as the lower end of the taught range. Therefore, App.'753 renders obvious present inventions of claims 18-22.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

7. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Nishi et al'182 in view of Hasegawa'258 (previously applied reference) does not teach or suggest present R¹ and R², which bond together to form an aliphatic hydrocarbon ring with the carbon atom to which they are bonded. Also, none of the presently cited references teaches or suggests present ester compound of claim 3.

Response to Arguments

8. With respect to present rejection over Hasegawa'071 in view of Chiba and present rejection over Hasegawa'178 in view of Chiba, applicants argue that tetrahydrofuranyl group and oxanorbornanediyl groups each contains a polar oxygen atom, which provides them with a chemistry that is significantly different from that of the non-polar cyclic group (i.e., the cyclohexyl group) of the reference. Applicants' such argument is found to be unpersuasive because even though a tetrahydrofuranyl group contains a polar oxygen atom and a t-butyl group does not contain a polar oxygen atom (just as the cyclohexyl group which does not contain a polar oxygen atoms), those two groups are very well known in the art to be interchangeable acid-labile groups. Applicants also argue that the resolution of 0.11 um of present resist composition is significantly better than the resolutions of compositions shown in the examples of the references. However, there is no example shown in present disclosure, which compares Hasegawa's Polymer 1 with Hasegawa's Polymer 1, in which the cyclohexyl group is replaced with a *tetrahydrofuranyl group*.

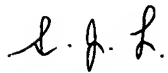
For the reasons stated above, present rejection over Hasegawa'071 in view of Chiba and present rejection over Hasegawa'178 in view of Chiba still stand.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

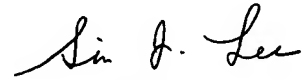
Art Unit: 1752

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
February 19, 2006



SIN LEE
PRIMARY EXAMINER